

Flight Scientist Report
Tuesday 03/23/2021 ACTIVATE RF56

Flight Type: Statistical Survey Flight

Flight Route: KLF I ATLIC ZIBUT 34.5/-70.75 ZIBUT ATLIC KLF I

Special Notes: Doing wind calibration work at beginning of flight. The Falcon had to wait to take off due to unexpected traffic at airfield. In meantime, the UC-12 worked an area and waited for the Falcon to catch up. A dropsonde (originally planned for 4, but this was a 5th drop) was dropped in that area due to extensive characterization by UC-12.

King Air

Pilot report (Jamison): SOFRS report complete for the UC-12.

Route: KLF I-ATLIC-ZIBUT-3530N/07045W-ZIBUT-ATLIC-KLF I. After takeoff, NASA524 was delayed approximately 20 minutes on deck at KLF I waiting for IFR release. 528 coordinated holding with Giant Killer in W-387K to wait for 524. Coordinated leaving holding to rendezvous with 524 in vcty of ATLIC and proceeded on planned profile. Winds at flight profile altitude of FL280 were approx. 280/20-30 kts. Clear air at altitude until approx. 30nm east of ATLIC on return leg, when high-level light cirrus was encountered; discussed with researcher and we decided to remain at altitude to complete final dropsonde launch, then commenced descent for recovery at approx. 10nm east of ATLIC. 5x dropsondes deployed, one of which was in middle of holding pattern inside W-387K.

Flight scientist report (Shane): RF056 (3/23/2021) on the UC12 was a statistical survey joint flight with the HU25 Falcon. The UC-12 took off from KLF I approx. 11:57 EST, and executed "Plan A" flying: KLF I ATLIC ZIBUT 34.5/-70.75 ZIBUT ATLIC KLF I. The Falcon was delayed about 35-40 minutes after the UC12 took off due to traffic on the airfield. A total of 5 sondes were dropped. One of the sondes was dropped based on a decision made on the fly to measure where the UC12 had done 2 large delay loops near the coast. Shane Seaman was the operator for HSRL-2, RSP, drop sondes, and the cameras. All instruments operated nominally.

Falcon

Pilot report (Slover):

Takeoff: 1233

Landing: 1555L

Duration: 3.4 hrs

705 miles.

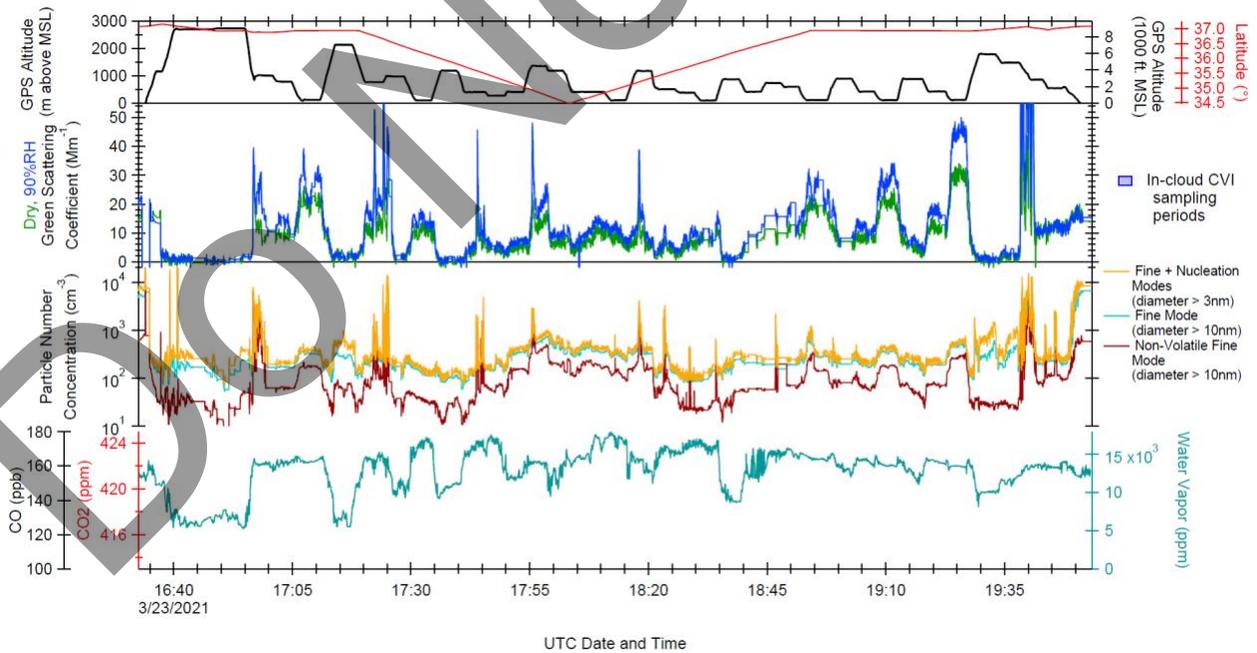
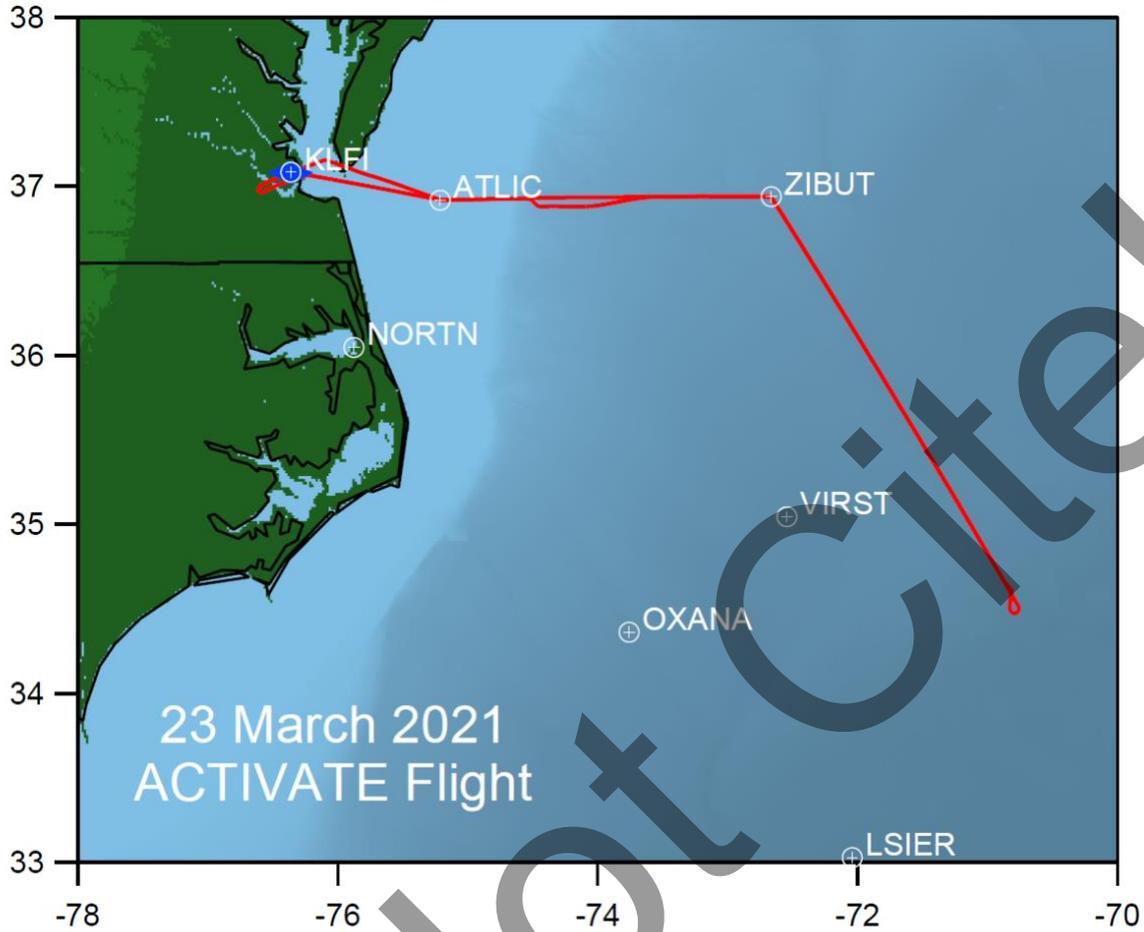
Crew: Slover/Baxley/Winstead/Ziemba

ACTIVATE research flight, flown as planned from KLFI – ATLIC – ZIBUT – N3430/W07045 – ZIBUT – ATLIC - KLFI. 45-min delay holding for takeoff awaiting 18 fighter aircraft landing from instrument approaches. No impact to data because King Air had enough fuel to delay airborne and wait. Outbound leg at 9,000' MSL flew 4 steady speed calibrations at 184 KIAS, 230 KIAS, 263 KIAS and 295 KIAS. Gross weight approximately 31,000 lbs. Science data collection was between 500' AGL and 7,000' MSL with most cloud data collected between 1,500' and 4,600'. Occasional above and below boundary level data were collected. Data collected until ATLIC on return where an IFR recovery was needed and headings/altitudes were per ATC direction.

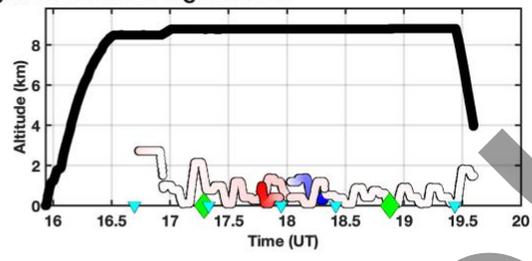
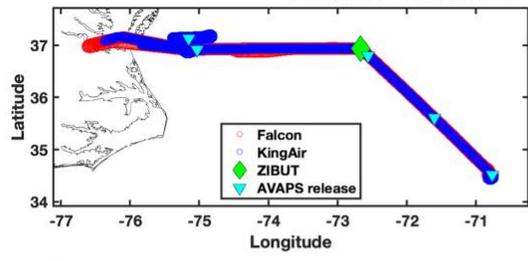
Aircraft has one minor write-up for crew chiefs to investigate for an intermittent gyro flag and should be available for next planned mission.

Flight scientist report (Luke Ziemba):

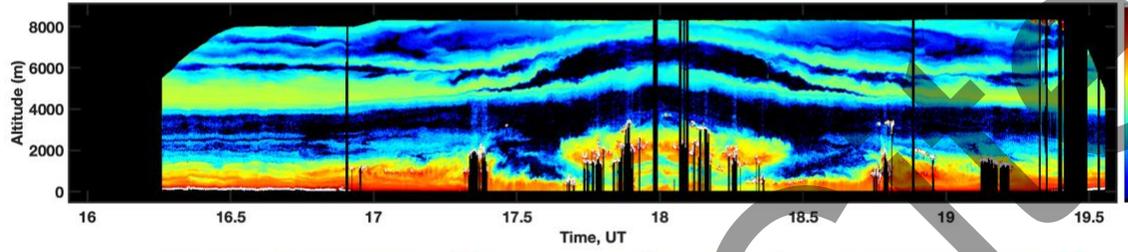
- Wind speed maneuvers done after initial climb-out.
- Clouds on the ZIBUT run were very sparse so cloud ensembles were generally shortened to a single ACB/BCB pair with MA+ACT.
- Cloud sampling at the south end was messy, with a lower wispy level at ~1500ft and remnant clouds that seemed detached from the MBL at ~4000ft. I tried to sample each when they were present by getting ACB/BCB pairs, but couldn't really do full ensembles in that area.
- At the south end there seemed to be lofted aerosol associated with the higher clouds. In retrospect, I probably could have done a better job getting above this layer to see the extent
- Possible NPF sampled near coast before entering clouds on the landing approach
- Note the very low number concentrations. CN was near 100cm⁻³ below 5000ft, which is really clean! Real-time look at CDP also seemed to show low droplet number concentrations. Clean conditions are consistent with the NE flow.



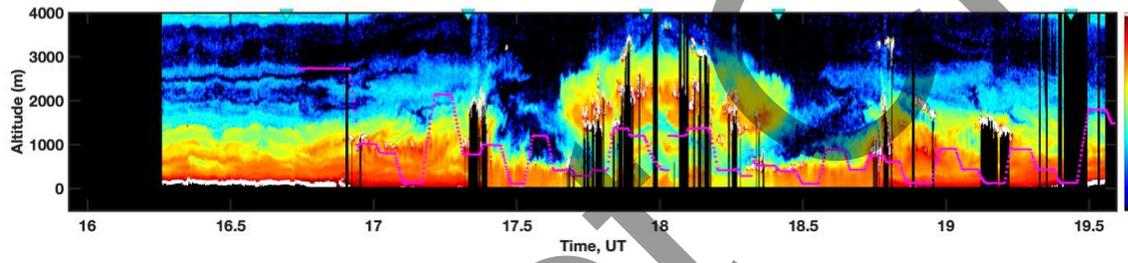
20210323 - ACTIVATE - KingAir and Falcon flight tracks



Time Difference (UC12-HU23) (min)



Aerosol scattering ratio (532nm)

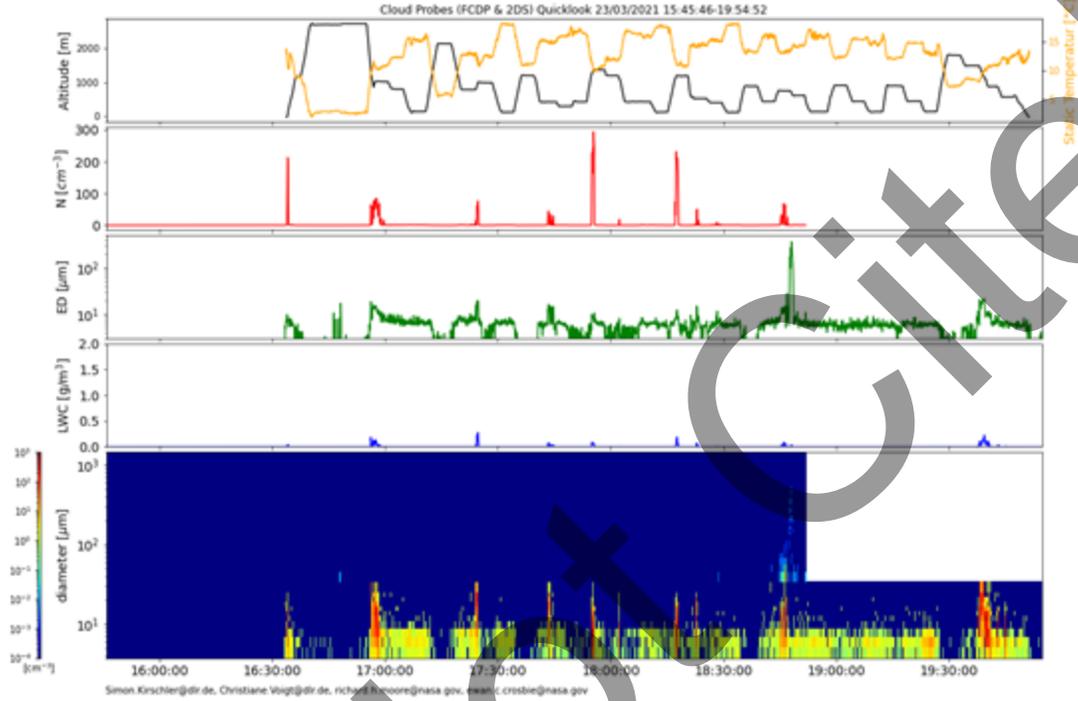


DO NOT

Quicklook ACTIVATE Cloud Probes (FCDP & 2DS) Quicklook

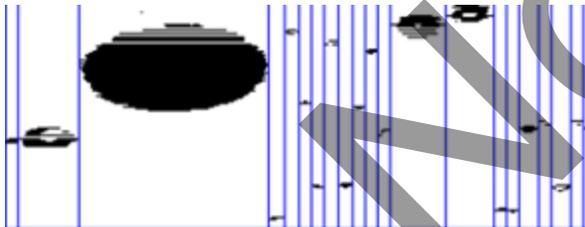
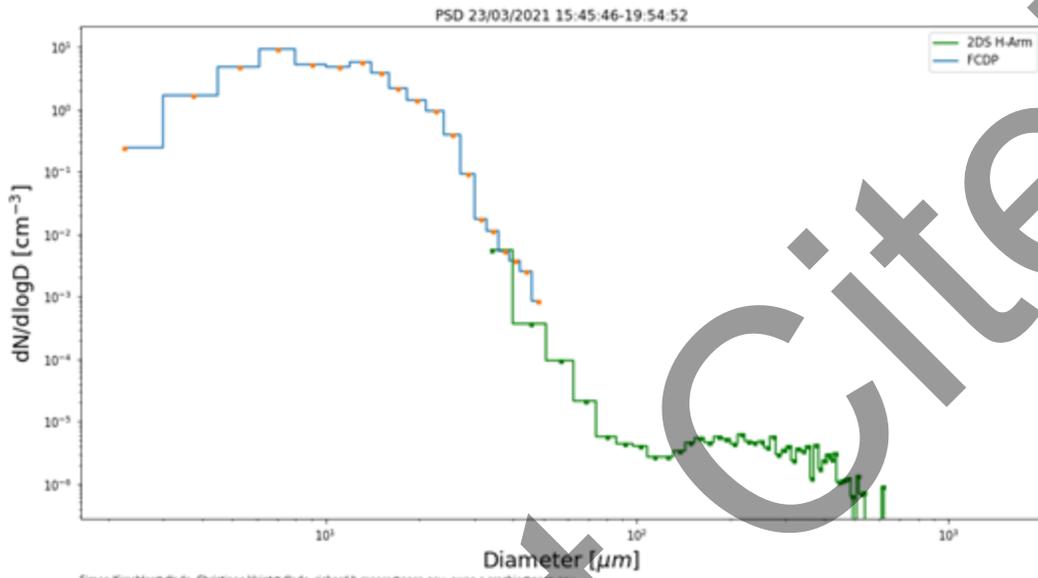
preliminary data, only for quicklook use

Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie



PSD ACTIVATE

preliminary data, only for quicklook use
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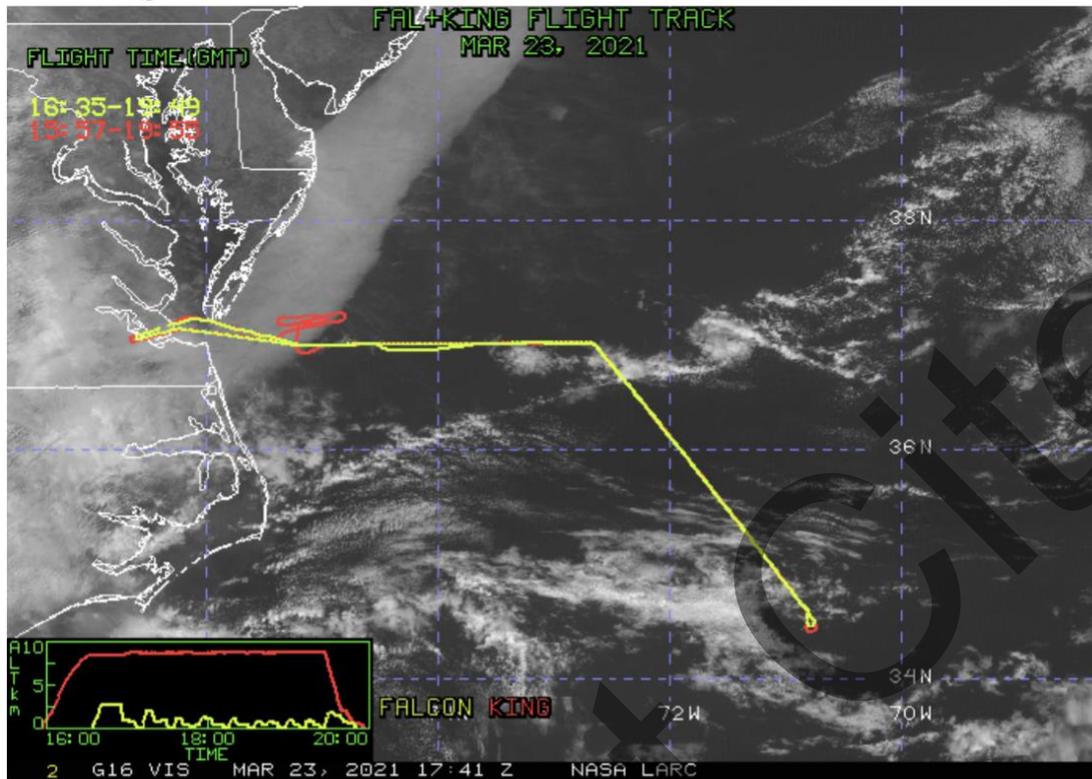


Only pure liquid clouds (2DS issue)

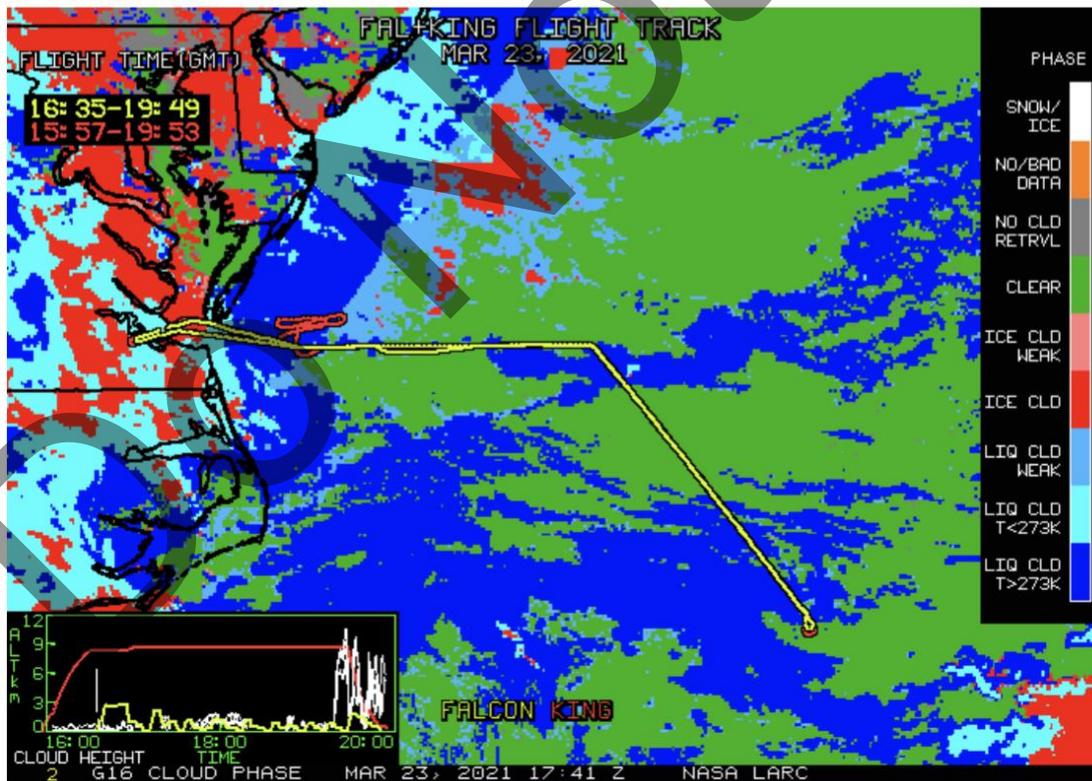
NASA-LaRC Clouds Group GOES-16 Quicklook Images for Flight 56, 17:41 UTC Mar 23, 2021

Do Not Cite!

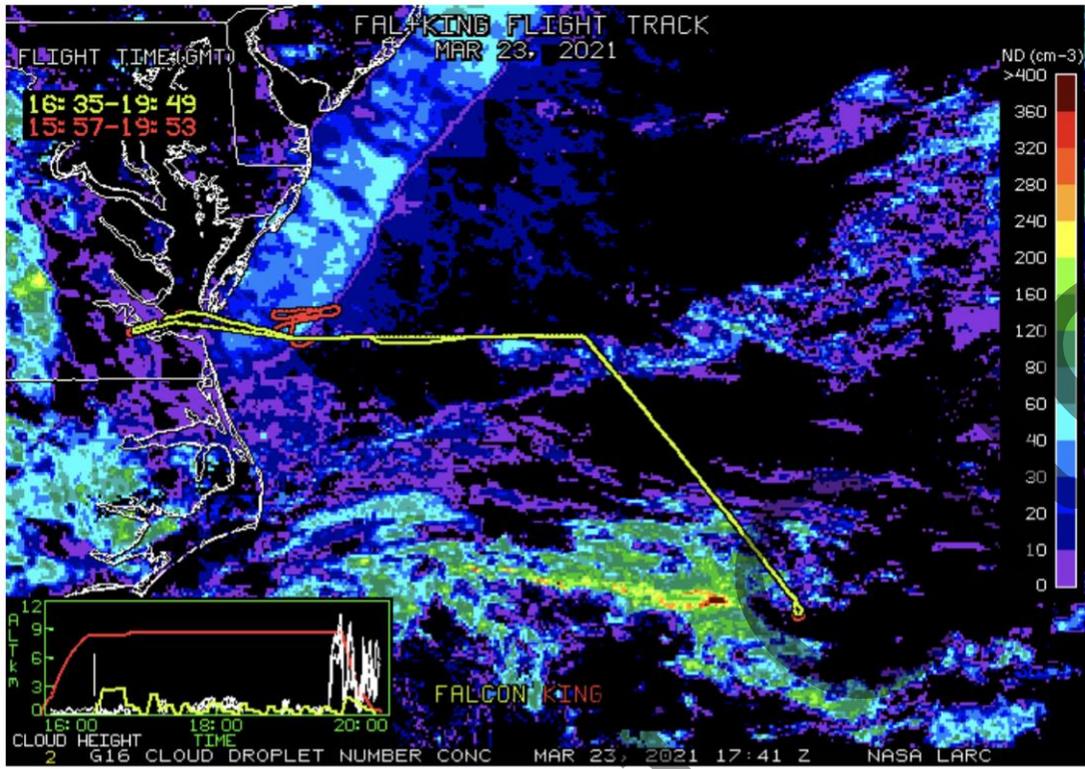
Visible Image



Cloud Phase



Cloud Droplet Number Concentration (cm-3)



Cloud-Top Height (Kft-ASL)

